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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/587,419	07/28/2006	Naoshi Nagai	1000023-000115	7281
21839	7590	03/01/2010	EXAMINER	
BUCHANAN, INGERSOLL & ROONEY PC POST OFFICE BOX 1404 ALEXANDRIA, VA 22313-1404				JONES JR., ROBERT STOCKTON
ART UNIT		PAPER NUMBER		
1796				
NOTIFICATION DATE		DELIVERY MODE		
03/01/2010		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com  
offserv@bipc.com

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/587,419	NAGAI ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	ROBERT JONES JR.	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 17 December 2009.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-22 is/are pending in the application.  
 4a) Of the above claim(s) 9-22 is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-8 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____ .
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>7/28/06, 12/28/06, 8/7/08</u> .	5) <input type="checkbox"/> Notice of Informal Patent Application
	6) <input type="checkbox"/> Other: _____ .

## DETAILED ACTION

### *Election/Restrictions*

1. Claims 9-22 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to nonelected inventions, there being no allowable generic or linking claim. Applicant timely traversed the restriction requirement in the reply filed on 17 December 2009.
2. Applicant's election with traverse of Group I, Claims 1-8 in the reply filed on 17 December 2009 is acknowledged. The traversal is on the grounds that all of the claims in non-elected Groups II-XII are dependent claims by virtue of the fact that they refer back to the polymer of Claim 1. This is not found persuasive.
3. Where a group of inventions is claimed in one and the same international application, the requirement of unity of invention referred to in Rule 13.1 shall be fulfilled **only** when there is a technical relationship among those inventions involving one or more of the same or corresponding special technical features. The expression "special technical features" refers to those technical features that define a contribution which each of the claimed inventions, considered as a whole, makes over the prior art.
4. As set forth in the written restriction requirement dated 17 November 2009, the technical feature shared by Groups I-XII, i.e. the polymer encompassed by Formula (1) of Claim 1, does not define a contribution over the prior art of Tsutomu. Therefore, the

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technical feature shared by Groups I-XII is not a “special technical feature”, and restriction between the groups is proper.

5. The requirement is still deemed proper and is therefore made FINAL.
  
6. The Applicant's election of the following species is acknowledged:
  - A. Within Formula (1), W and Z = oxygen;
  - B. Within Formula (4), R<sup>2</sup> = -CH<sub>2</sub>CH<sub>2</sub>-
  - C. Within Formula (9), G = hydrogen
  - D. Within Formula 14, one of X and Y is hydroxyl, with the other being a group of Formula (15) wherein E = oxygen and R<sup>7</sup> = polyalkylene glycol.
  
7. With respect to Formula (4), the Examiner was unable to find prior art which read on the elected species. The requirement for election of a species for the variable R<sup>2</sup> has been withdrawn. The search has therefore been expanded to include R<sup>2</sup> groups having 1 to 20 carbon atoms and optionally heteroatoms.

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

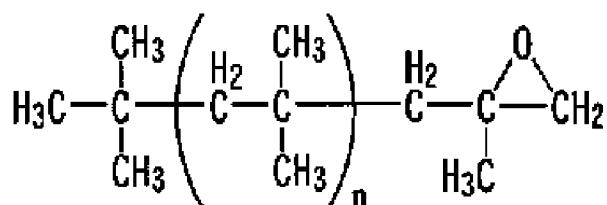
A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

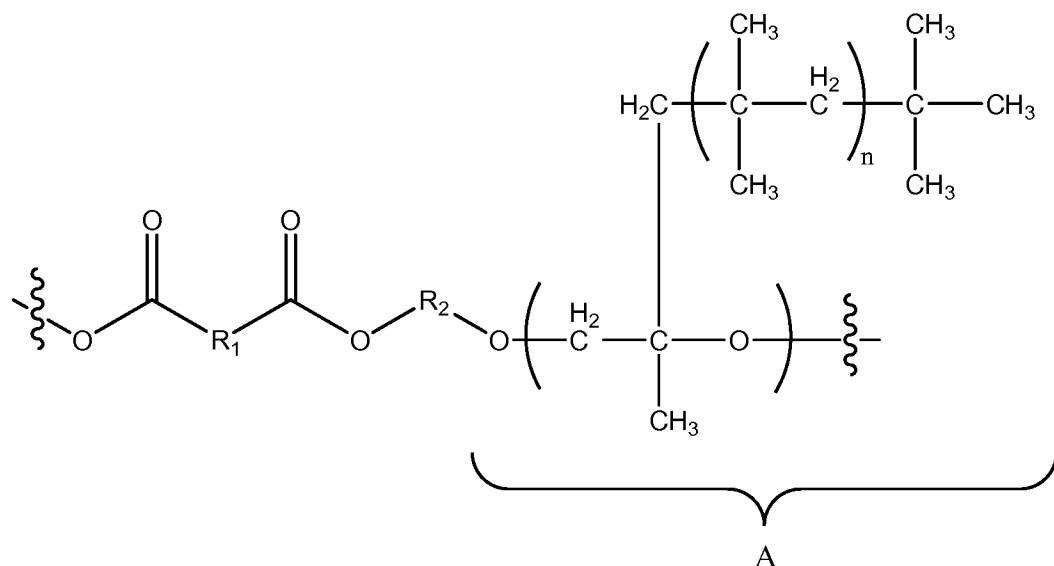
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9. Claims 1, 2, 4, and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsutomu et al (JP 2003-292602; machine translation referred to herein).

10. Regarding Claims 1 and 8, Tsutomu teaches a polyester composition having improved hydrolytic resistance and stretch characteristics obtained by kneading a thermoplastic polyester resin and a liquid polybutene having a terminal epoxy group (Abstract). The epoxidized polybutene is illustrated below (p. 4, [0011]):



11. This compound is obtained from polybutene having a molecular weight of from 200-10,000 (p. 6-7, [0021]). The epoxy group reacts with the carboxyl and/or hydroxyl groups in the polyester (p. 7, [0024]). The result of this reaction will be a polymer having the general formula shown below:



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12. The bracketed segment A illustrated above corresponds to Formula (1) of Claim 1, wherein A is a polymer of butene, an olefin having 4 carbon atoms, the polymer having an average molecular weight of 200 to 10,000; R is an alkyl group having 1 carbon atom; Z is an oxygen atom; W is an oxygen atom; x=1; and y=1. Thus, Tsutomu reads on the polymer of Claim 1.

13. Regarding Claim 2, the portion of the formula illustrated above contained within the parentheses corresponds to the claimed Formula (2) where n=1.

14. Regarding Claim 4, preferred polyesters include PET, PBT, PEN, and PCT (p. 5, [0017]). These polyesters are based on an R<sup>2</sup> segment containing either phenylene or naphthalene moieties which contain 6 and 10 carbon atoms, respectively.

### ***Claim Rejections - 35 USC § 103***

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

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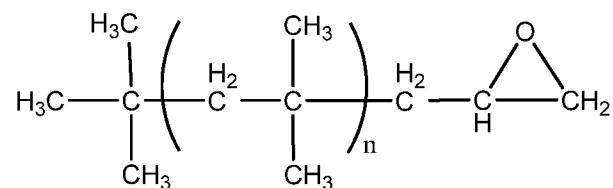
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

17. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

18. Claims 1-3 and 7 are rejected under 35 U.S.C. 103(a) as obvious over Riddick et al (US Pat. No. 5,008,338).

19. Regarding Claim 1, Riddick teaches reacting epoxidized polybutenes with a hydroxyl to form a hydroxyether. Approximately 10% of said polybutenes contain a monosubstituted epoxide structure (col. 2, lines 52-58). The epoxidized polybutene has a molecular weight within the range of 200 to 20,000 (col. 3, lines 38-40).

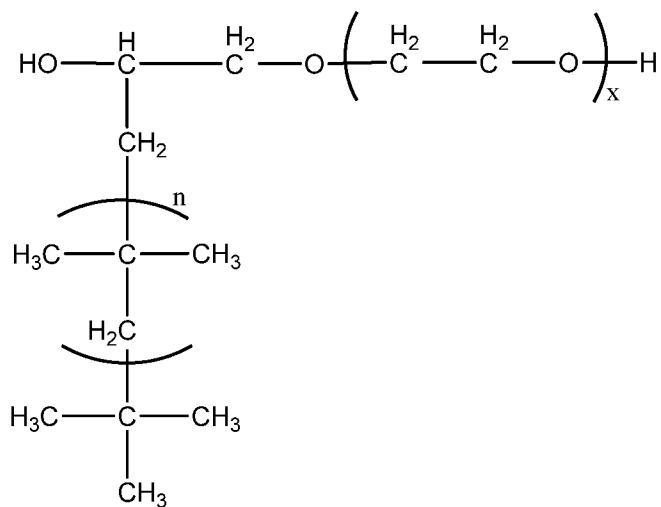
Monosubstituted epoxidized polybutenes will have the structure shown below:



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20. Suitable hydroxyl compounds include polyfunctional hydroxyl compounds such as diethylene glycol. Other diols including ethylene glycol and propylene glycol are disclosed, as well as hydroxyl functional polymers (col. 4, lines 58-64).

21. It would have been obvious to one of ordinary skill in the art at the time of the invention to react an epoxidized polybutene with a molecular weight within the range of 200 to 20,000 with diethylene glycol, as the two are explicitly taught as being suitable reactants. The compound resulting from the reaction of epoxidized polybutene and diethylene glycol will have the structure shown below, where x=2:



22. This corresponds to a polymer of Formula (1) wherein A is a polymer of butane, an olefin having 4 carbons; A has a molecular weight of 200 to 20,000; R is a hydrogen atom; W and Z are oxygen atoms; and x and y are each 1. Thus, Riddick satisfies all requirements of Claim 1.

23. Regarding Claim 2, the portion of the compound above corresponding to the ring-opened epoxidized polybutene meets the requirements of Formula (2), where n=1.

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24. Regarding Claim 3, the compound above has hydroxyl groups at both terminals, and therefore also meets the requirements of Claim 2.

25. Regarding Claim 7, the compound above corresponds to Formula (14) wherein A and R are as set forth above; X is a hydroxyl group; and Y, represented by diethylene glycol, corresponds to Formula (15) wherein E is an oxygen atom and R<sup>7</sup> is a polyalkylene glycol group containing two repeat units. Alternatively, other diols including ethylene glycol and propylene glycol are disclosed, as well as hydroxyl functional polymers. Based on this teaching, one of ordinary skill in the art would at once envisage the use of a hydroxyl functional polymer such as polyethylene glycol or polypropylene glycol.

26. Claims 1, 5, and 6 are rejected under 35 U.S.C. 103(a) as obvious over Close (US Pat. No. 5,811,483). Chen (US Pat. No. 5,962,572) is provided as extrinsic evidence.

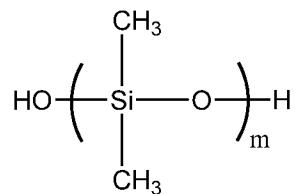
27. Regarding Claim 1, Close teaches a water repellent system comprising at least two components: (a) a silicone rubber gum and/or polysiloxane polymer; and (b) a second resin selected from a group which includes polybutene (col. 2, lines 18-26).

28. Examples of polybutenes which are useful include AMOCO® H300, a polybutene of medium viscosity with an average molecular weight of 1290 (col. 4, lines 46-50). As evidenced by Chen, H300 is a polybutene with epoxide functionality at one end of the polymer (col. 5, lines 25-30).

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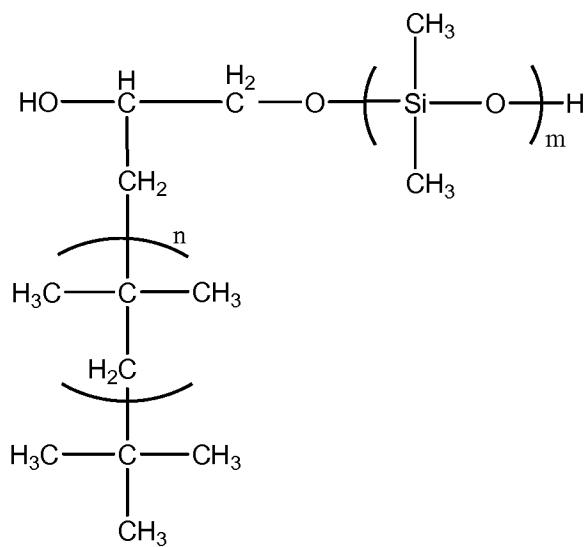
29. Exemplary silicone components include GE® 4026, a silanol-stopped siloxane liquid (col. 2, lines 47-48). Thus, Close contemplates the use of siloxanes with terminal –OH groups. Close's silicone compounds have recurring structural units of the formula –Si(R<sup>1</sup>)(R<sup>2</sup>)-O- wherein the radicals represented by R<sup>1</sup> and R<sup>2</sup> are hydrocarbon radicals (col. 2, lines 49-53). In a preferred embodiment, at least half of the radicals should be methyl; and in many cases all of the radicals are methyl (col. 2, lines 61-63). One embodiment includes 2,000 repeat units (col. 3, lines 8-11).

30. Based on Close's contemplation of hydroxyl terminal siloxanes and the preferred embodiment wherein all radicals are methyl, it would have been obvious to utilize a siloxane having the formula shown below, wherein m=2,000:



31. Combining the siloxane illustrated above with AMOCO® H300 will result in a compound having the following formula:

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32. The above formula corresponds to the polysiloxane compound of Claims 1, 5, and 6 wherein R = hydrogen; A is polybutene with an average molecular weight of 1290; W and Z = oxygen; R<sup>5</sup> and R<sup>6</sup> are methyl; G = hydrogen, and m=2,000.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT JONES JR. whose telephone number is (571)270-7733. The examiner can normally be reached on Monday - Thursday, 9 AM - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RSJ

/David Wu/  
Supervisory Patent Examiner, Art Unit 1796